

Mid-Atlantic Hydric Soils Committee

January 2000

Updates of book

- C How many books are still available? - 250
- C User notes - should they be regionalized ?
- C Bolded portions cannot be changed
- C Group agrees that user notes should be regionalized
- C **EVERYONE SHOULD LOOK AT THEIR OWN REGIONS, DETERMINE APPROPRIATE CHANGES AND COMMENTS AND SEND TO LENORE PROIOR TO MEETING IN JUNE**
- C Additional actions in 6 months

***Power point slide show on Indicators - contact Jeff for copy (on zip disk or CD); runs 3-4 hours**

Problems with specific indicators

- C Lenore gives update for NTCHS: (also on NTCHS website)
 - < F1: Eliminated from Mid-Atlantic Ridge & Valley and West (LRRN, R, and S)
 - < May create new indicator for this region; can still use F1 as a test (not stand alone) indicator in N, R, and S
 - < No comments on A7 from last meeting
 - < Typo A5 in our book
 - < F8: discussion of difference between flooding and ponding - water source, rather than movement is basis for definition. Should F8 be used in floodplain depressions?; concerns about "legal discrepancy" that lawyers may pick at; Wade says F8 is appropriate for use in foodplains; update our user notes
 - < TF11: not in our region, but new testing indicator

Lenore gives update on Piedmont HGM- Slope model development

- C Solicit assistance for Jan/Feb quarterly sampling, 20 more sites needed 10 pedon sites in Aug/Sept

Yellow Soils

- C Low elevatation, outer-coastal plain soils with definite hydrology & hydrophytic vegetation but high chroma soils, also appear in inner-coastal plain areas (Miocene sands?)

- C Debate over whether to draft anything

Ralph provides MD Training Schedule:

- C (27-31 March) - Basic Wetlands ID - Gunpowder State Park, Baltimore County
- C (10-14 April) - Restoration & Creation - Baltimore Corp (Irvine Science Center)
- C (8-12 May) - Soils - NJ
- C (22-26 May) - Hydrology - Patuxent Research Center
- C (19-23 June) - Grasses, Sedges, & Rushes- Patuxent Wildlife Center
- C (10-14 July) - Intermediate Soils - Patuxent; also advanced soils in Trenton, NJ
- C (11-15 Sept).- Plant ID - Eastern Neck Wildlife Refuge, Maryland,
- C (30 Oct. - 02 Nov) - Wetlands Regulatory Workshop - Atlantic City

Discussion of Field Trip

Ralph: this system was different than MD & NJ, more confining layer here?

Carl: thinks they are same kind of sediments (not Miocene or Piedmont),

- C Yellow due to being closer BY horizon
- C Wants data to support that this bright soil is hydric
(ie, that indicator F3 are correct here)
- C Discussion of presence of confining layer and perched water - what type of
continuing layer - not a fragipan

Need descriptions from NJ, Eastern Neck Wildlife Refuge, to compare and characterize Yellow or Bright Soils:

Wade: F3 was specifically intended to capture this exact soil; this condition is seen from
FL to IN

Ralph: why is soil with chroma 3 in some Spartina patens marshes?

Lee: 20 years ago VA Tech soils people put in wells to look at surface water and
correlated high water table with chroma 3 & 4
(in Jim Baker's Files in Blacksburg)

Marty's presentation on yellow soil study:

- C Study purpose (1) determine why morphology stays bright in saturated soils
(2) develop approach for how to ID these soils
- C Hypotheses:
 - (1) soil oxyaquic
 - (a) low organic matter,
 - (b) low temps,
 - (c) hydrologic conditions (e.g., flow rate)
 - (2) soil materials brown
 - (3) these iron oxides more resistant to reduction than in most soils
 - (4) organic color

- C Pick 3-4 sites with good soil transects, relatively undisturbed
- C Topographic survey
- C Automated equipment (RDS wells) - twice daily; temp, probes (HOBOs) at 10 cm, 30cm 450 cm depths
- C Redox measures 5-6 electrodes; at 10 cm, 20cm, 30cm, & 50 cm depths
- C Weather data - rainfall, air temp.
- C Plant community assessment
- C Hydrology indicators assessment
- C Soil characterization analysis
- C Color analysis, Munsell use in field, digital colorimeter in lab (can also take to field)

Marty's Red Parent Material Soils Study

- C ID propensity or resistance of soils to develop redox features
- C Triassic shales in Mid-Atlantic
- C TF2 - 7.5YR or redder with 4/4 and depletions or concentrations
- C Extract Fe oxides, DCB treatments - variety of treatments
- C Developed chroma index (little change in value):

$$CI = \bullet \text{ Chroma (max)} + 2. (\bullet \text{ Chrome (1 hr)})$$
- C Hue index:

$$HI = (\bullet \text{ hue (1hr)}) \text{ divided by } \bullet \text{ hue (max)} + 100$$
- C Combined chroma/hue index:

$$\text{color change Propensity Index (CCPI)} = HI + 4 * (CI)$$
- C found that there are soils that it is hard to determine if redox features are developing
- C Don't know why yet
- C Not all red soils are the same and should be treated the same (TF2 is appropriate for some)

New Jersey Use of '89 Manual

- C NTCHS had made changes to hydrology requirements for hydric soil (2 weeks), though Manual minimum for hydrology is 7 days.
- C Can NRCS Field Indicators be used in '89 Manual (i.e., will their presence identify adequate hydrology)
- C Current NTCHS's criteria for hydric soils does not address duration
- C NJ wants a letter to allow use of Indicators
- C Rick asking about connection between criteria and indicators; Marty said criteria 2 was only for the database and not to be used in field
- C John - criteria designed to ID hydric soil series, not ID hydric soil pedons (Indicators for pedons)

Groundwater Monitoring Wells - Rick

- C Establish wetland reference sites to determine water tables
- C Representative indicator and references sites on protected lands
- C Tied to USGS stream gauge with telematic data
- C Work with USGS (Bob Zampella in NJ)
- C Model to link stream levels with groundwater wells
- C USGS needs to put telemetric data wells in wetlands
- C Marty could build model based on relationships between weather, stream gauges, and groundwater
- C Wade -NRCS/4 MN, 3-OR, 3-LA, 3-TX, 1-FL, 2-MD, 4-IN measuring saturation & water table
- C Rick will get USGS to hook up with Marty: try to get wells into wetlands

Harold's concern with re-wetting drained hydric soils

- C Marty -difficult because soil morphology develops over time & relict conditions persist
- C "rusty nail" technique - place iron rod & examine what portions oxidize
- C Vepraskas found differences, but based on ditched structure
- C No typical morphological features; possible use mychorizae
- C Lee has seen some measurable morphological changes in 5-10 years in mitigation sites from C (now surface) horizons - in upper 6-12 inches

Bruce - Fungi Study

- C Delmarva coastal plain
- C FAC dominated sites, no inundation, mostly seasonal saturation
- C Many ditches in areas confuse issues- soil indicator of hydrology, ectomycorrhizal fungi (ECM)
- C Hyphae (3 months) visible to naked eye
- C Does not form under saturated conditions
- C Trees with ECM: Aceraceae, Cupressaceae, Salicaceae, etc.
- C Can the vertical distribution of ECM indicate seasonal highwater table?
- C Field 4 locations, 3 subsites per -wetland , upland, and drained wetland
- C Monitoring - automated & simple wells, redox potential
- C Targetting Pinus taeda (common at all sites)
- C Monitor sites for 3 years
- C If ECM can be correlated, develop indicator
- C Sample at wettest & driest times of year
- C 2" seams to be cutoff
- C ECM grow in a season, can be identified as live or dead; spores can mitigate up and down depending on the water table (though not throughout the season since only form on feeder roots)

Research Needs Ideas

- C Yellow soils
- C Piedmont Floodplains - post settlement overburden - 50 - 150 cm thick over hydric soils; many concentrations, few depletions; areas look wet, but morphology does not look so wet (3&4 chroma); White Clay Creek, PA , Rock Creek, MD
John Chiburka - Thinks Larry Hepner at Del. Val. College would be interested in participating
- C Other problem soils - glauconitic , high chroma marsh (Spartina, Patens)
- C Red soils - TF2 (Wade would rename it “red alluvium” from “red parent material”)
 - < need sites and well data
 - < 1 well in every part of the landscape - driest, wettest, & middle
 - < stay in triassic residuals
 - < Marty - stay out of large floodplains; can use some alluvium as long as site above
 - < send soil material from well sites to Marty for analysis, also description
 - < contacts - NJ-Dan Shinder, NY - Ed Stein, PA - John Chirburka, VA-?

NTCHS Update

- C Indicators 4.0 is out of date, but updates are on websites - see technotes 7&9 - will have to incorporate some type of environmental data
- C Technical standard will be coming out for indicators
(must be set to prove something is a hydric soil - based on well, EH, and PH data)
- C Corps guidance allows for use of Indicators that correlate to 87 Manual, problems soil; all correlate except F1 & A7

Next Meeting:

- C Piedmont Floodplains
- C Red shales in MD and WV
- C Frostburg, MD on 27 & 28 June - Carl & Marty will work with field site logistics
- C 30 May - 16 June - Marty teaches hydric soils course